Topic: Monitoring and intake assessment

PM 06

Influence of assigning values to non-detects on the intake of chloorpyrifos via fruit and vegetables in a Belgian subpopulation

Bilau, M.*, Matthys, C.*, De Henauw, S.*, Claeys, S.[#], Steurbaut, W.[#], Willems, J.L.*

** Department of Public Health, Ghent University, Ghent, BELGIUM*
[#] Departement of Crop Protection, Ghent University, Ghent, BELGIUM
e-mail: maaike.bilau@ugent.be

In order to estimate the exposure to chloorpyrifos through the intake of fruit and vegetables, Belgian contamination data (n=1226) analysed between 1995-2001, were combined via a probabilistic model with consumption data, based on a food frequency questionnaire in Belgian women of childbearing age (n=1168).

As the majority of the contamination data (1202 out of 1226 samples; 98%), measured on apple, grapes, leek, lettuce, oranges, Brussels sprouts and carrots were below the limit of quantification (LOQ = 0.05 mg/kg), 4 different scenarios of exposure assessment were compared. In the simulations, the LOQ (worst case scenario), LOQ/2, LOQ/3 and 0 were respectively assigned to non-detects.

At median uncertainty, the exposure via these food items ranged from 0.022 µg/kg bw/d (ND = 0), over 0.038 µg/kg bw/d (LOQ/3) and 0.046 µg/kg bw/d (LOQ/2) to 0.074 µg/kg bw/d (LOQ). At the 99th percentile the exposure estimates were compared with the Acceptable Daily Intake (ADI= 10 µg/kg bw/d). Following results were seen: 3.2 % of the ADI (ND = 0), 3.4 % of the ADI (LOQ/3), 3.7 % of the ADI (LOQ/2), 4.2 % of the ADI (LOQ). As it is demonstrated through this "sensitivity analysis" that the default assumptions have no relevant influence on the final exposure estimation, we can conclude that it is not necessary to attempt further refinement in the current context.

There are still some uncertainties left, as the effects of homeprocessing (such as washing, storing, boiling, peeling) were not taken into account. We also did not consider the possible additive effect of other organophosphate residues.